10.0 UTILITIES ARTICLES

NOTES

PLUMBING 10.1

10.1.0 INTRODUCTION

Although most plumbing work will probably be done by a specialized subcontractor, familiarity with older plumbing and basic repair and maintenance techniques are important to the overall maintenance of Fort Lewis.

Older plumbing often utilizes cast iron soil lines, galvanized water lines and clay pipe sewer lines. Since these materials differ from what is in common use today, connections between different materials and contact corrosion between different materials are chief concerns when repairing or modifying an existing system.

To avoid corrosion, always connect new copper pipe to old galvanized pipe with a dielectric union or a short brass nipple. No-hub couplings which consist of a neoprene sleeve with stainless steel band clamps at both ends, are available for connections to old cast iron. A Calder coupling, which compensates for differences in pipe thickness, is available for connecting to old clay pipe.

For most plumbing modifications, piping must be cut to insert the new line, new tee, etc.

When modifying a soil pipe, cut with a soil pipe cutter (snap cutter). File cut ends and remove loose debris. Slip a no-hup coupling over end and insert new piece. Slide coupling half way over end of new pipe and tighten stainless steel band clamps with a nut driver or screw driver. New waste lines should slope 1/4" per foot.

Cut galvanized pipe with a hacksaw; cut copper with a tubing cutter. Always use dielectric unions with dissimilar metals.

Never join dissimilar metals directly.

If a framing member is cut during piping installation always reinforce the member with steel or plywood plates. **Do not cut into historic millwork.** Paint all exposed piping.

When soldering, keep a spray water bottle or fire extinguisher handy.

10.1.1 TYPICAL REPAIRS

10.1.1.1 Sewer odor.

CAUSE
Gas is escaping from infrequently used drains, water in P-trap has evaporated.

REPAIR
Pour 1 gallon water into drain, then add a small amount of oil or kerosene to cover water and to slow evaporation.

10.1.1.2 Dripping faucet.

CAUSE
Worn washer.

REPAIR
Replace the washer at the end of the stem.

10.1.1.3 Leak at faucet stem.

CAUSE
Wear.

REPAIR
Replace the packing washer, or wrap graphite wicking around stem. Turn the packing nut tightly down against wicking.

10.1.1.4 Running toilet.

CAUSE
Water logged or unadjusted float.

REPAIR
Replace float if water logged.
Bend float arm to raise to the level required to shut off water.
If this doesn't work, replace the washer in the ballcock valve, or the complete ballcock.

10.1.1.5 Toilet tank does not fill.

CAUSE
Unadjusted flush stopper.

REPAIR
Clean valve seat and flush stopper.
Clean lift wire with steel wool.
Adjust stopper to settle directly over opening.
If this doesn't work, replace flush stopper.

10.1.1.6 Tank handle must be continuously depressed.

CAUSE
Long lift wire.

REPAIR
Shorten the lift wire raising the flush stopper.

10.1.1.7 Leaks at pipe joint connections.

CAUSE
Loose fitting.

REPAIR
Shut off water, remove fitting, clean ends, apply pipe joint compound or teflon tape to ends and reinstall.

10.1.1.8 Leaks at pipes.

CAUSE
Condensation
Corrosion

REPAIR
If condensation, pipe can be insulated.
If corrosion, pipe must be replaced as soon as possible.

10.1.1.9 Knocking pipes.

CAUSE
Trapped air in line.

REPAIR
In an inconspicuous location, replace bend or elbow near faucet with a tee. Connect to a vertical 12" length of pipe, capped at top. This will create an air chamber.
Secure all lengths of pipe to framing or blocking to prevent movement.
If an air chamber exists, drain line to restore air pocket.

10.1.1.10 Frozen pipe.

CAUSE
Lack of insulation.

REPAIR
Wrap in cloths saturated in boiling water at end of freeze. Do not use propane torch.
Insulate lines, or drain if not in use.

10.1.1.11 Soft flooring under toilet.

CAUSE
Moisture has decayed subfloor.

REPAIR
Remove toilet, covering exposed drain with rags to block sewer gas.
Remove finish floor to inconspicuous joint.
Using a circular saw, set to the depth of subfloor, cut a square extending to the inside faces of adjacent joists.
Nail 2 x 4's to inside faces of existing joists, as long length as possible.
Replace subfloor and finish flooring.
Install new wax ring at drain, reinstall toilet.

10.1.2 MAINTENANCE RECOMMENDATIONS

A. Check all main shut-off valves yearly to assure they won't be frozen or break off in an emergency. Tag them if they are not easily identified.

B. Insulate all piping and hose bibs which may be subject to freezing in winter.

C. Keep drain strainers in place and clean often to keep drains clean.

D. Clean porcelain and chrome fixtures with a non-abrasive cleaner such as Lysol Bathroom Cleaner.

E. Do not pour cooking grease down drains.

F. Drips should be repaired as they occur, to prevent wear to fittings and to porcelain finish.

G. Clean drains when sluggish to avoid clogs.

H. Change radiator valve seats and rings every three years.

10.1.3 UPGRADING

When piping systems reach 60 years of age they should be scheduled for replacement. This will be more cost effective than various patches and repairs which may start a chain reaction of leaks.

Replace cracked or worn fixtures with best quality new fixtures of compatible form and proportion. As an alternative, fixtures may be reporcelained if otherwise serviceable.

For better heat control and energy savings, thermostatic radiator valves may be installed on radiators. (See Sources) Radiators should be cleaned, loose or excess paint removed, and repainted.

PLUMBING FIXTURES 10.2

10.2.0 INTRODUCTION

A detailed analysis of plumbing fixtures is not within the scope of this manual. However, it is important to note that several historic fixtures are still in use at Fort Lewis which should be protected and maintained.

Plumbing fixtures are utilitarian features whose primary function is to maintain sanitary living and working conditions. When porcelain finishes wear off or fixtures become cracked, maintenance in a sanitary state becomes more difficult. Rusting and worn faucets and other trim also become maintenance problems and cause wear to other components of a plumbing system.

Plumbing fixtures may be rechromed, reporcelained or replaced. When selecting replacement fixtures it is important and most economical to specify high quality, durable products. The design of fixtures should be compatible with the substantial look of historic forms. Extremely modern or fashionable designs will soon look inappropriate in a historic setting.

10.2.1 TYPICAL REPAIR AND MAINTENANCE

Repair of plumbing fixtures is covered in the previous article, Plumbing, 10.1.

NOTES

10.3.0 INTRODUCTION

Lighting technology and user demands have changed since the buildings at Fort Lewis were first occupied. Original electric interior lighting fixtures were probably glass pendants, commonly known as "school house" fixtures.

Most of these fixtures have been removed and replaced with rectangular fluorescent ceiling fixtures which increase the general lighting levels but detract from the overall spatial characteristics and texture of historic buildings.

In many places, electrical service has been extended by surface mounted raceway or conduit.

10.3.1 TYPICAL REPAIRS

Repairs to electrical service should be done by a certified electrician, with experience in historic buildings. Repairs should not deface millwork

10.3.2 MAINTENANCE RECOMMENDATIONS

A. Any existing original fixtures should be cleaned and protected.
B. Do not overload circuits with excessive fixtures and office equipment.

10.3.3 IMPROVEMENTS

All conspicuously mounted conduit should be rerouted along lines of baseboard or chair rail. Vertical drops should be concealed in corners or in chases and closets.

Conduit should be painted to match adjacent surfaces.

A lighting improvement plan for public spaces could also be incorporated. This would consist of three components; restoration of original, indirect lighting, and task lighting.

Original pendant fixtures and fixtures to match or harmonize with originals should be reinstalled at original locations.

Secondly, overall lighting levels should be increased with the use of energy saving indirect fluorescent fixtures concealed in soffits or troffers to create indirect up-lighting. This will correct the effect of glaring rectangles superimposed on historic ceilings, and produce more even, softer lighting. Related finish carpentry must be coordinated with electrical work.

The third component is task lighting. Energy efficient lighting systems, as now required by most building officials, encourage the reduction of overall lighting levels and the increase of lighting at "point of use". Task lighting includes desk lights, under shelf lights, floor lamps, etc., at individual work stations.

Avoid locating service panels where visible from entry or lobby.

Avoid locating service entrances on primary facades of historic buildings.

Electrical work should be done by a certified electrician and coordinated with finish trades.

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